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UNCLAS SECTION 01 OF 03 KINSHASA 000042

SIPDIS

E.O. 12958: N/A

TAGS: [PREL](#) [PGOV](#) [SENV](#) [UNESCO](#) [ECON](#) [EPET](#) [PREF](#) [CG](#)

SUBJECT: UPDATE ON NYAMULAGIRA VOLCANO NEAR GOMA: SPECIALIST SAYS
RELEASE OF DANGEROUS GAS IS UNLIKELY

REF: 10 Kinshasa 08

11. Summary: On Thursday January 7, USAID/OFDA Rep and Goma-based POLOFF attended a special briefing by Dario Tedesco, an Italian volcanologist with extensive experience analyzing Goma's volcanoes and Lake Kivu. Tedesco said that although lava flows were not headed toward any populated area, the lava from this eruption might well flow over the Goma-Sake road if the eruption continued for several months. He did not think this was a possibility for at least another several weeks, however. He reassured the community it was very unlikely lava from this eruption could release deadly gases from Lake Kivu or that it would trigger an eruption of Nyiragongo Volcano, much close to Goma. In terms of humanitarian side effects, Tedesco doubted that water pollution would be a major concern, but suggested that the effects on agriculture in the area could be serious if the eruption continued long term. Tedesco also doubted the value of any possible future "degassing" interventions for the lake. In the days following the briefing, volcanic activity has significantly diminished, and the chances that this eruption will have major detrimental effects on the populations or the environment subsided. End summary.

Major concerns

12. At the time of Tedesco's briefing, Nyamulagira volcano, approximately 35 kilometers from Goma and in proximity to the Virunga Park, a UNESCO World Heritage site, was in full eruption, with lava flowing both from an external fissure and also beginning to fill in the previously-empty crater. The flow from the fissure had, since the beginning of the eruption early in the morning on January 2, already traveled 7 kilometers in a southerly direction, covering approximately half the distance between the volcano and the Goma-Sake road. By January 7, it was, however, no longer moving very quickly, having cooled significantly and having spread from a 15-meter wide stream to one over 200m in width.

13. There were three major concerns at the time: that the lava flow would cross the Goma-Sake road, cutting off access to Sake and Masisi from Goma for as long as it continued to flow, that the activity of Nyamulagira could trigger an eruption in Nyiragongo Volcano, just 10 kilometers from Goma, and finally, that the lava would reach Lake Kivu at a point somewhere in the Kabuno Bay, the part of the lake near Sake that is almost cut off completely from the rest of the lake and which has a different and more volatile chemical composition than the rest of the lake. (There had been considerable speculation that an influx of lava into this part of

Lake Kivu could cause a "turnover" of the gas trapped beneath the lake's surface and release a deadly cloud of CO2 gas that could kill residents of Sake and Minova, similar to what occurred with Lake Nyos in Cameroon in 1986.) It was not a concern that lava would reach populated areas since it was not headed in that direction and couldn't, for topographical reasons, reach Goma.

14. As regards the concern of Nyamulagira "triggering" an eruption in Nyiragongo, Tedesco pointed out that Nyamulagira and Nyiragongo have separate underground systems and that an eruption in one would not normally "cause" the eruption of the other and has not done so in the past. He noted, however, that since it was seismic activity deep underground that had permitted an eruption in Nyamulagira, it could not be ruled out that the same seismic activity might also affect Nyiragongo. There were, he insisted, as yet no signs that Nyiragongo was preparing to erupt.

15. As concerns the Goma-Sake road, Tedesco first noted that Nyamulagira eruptions were very common, occurring every 2-3 years or so. He added that though eruptions had been short in duration in recent years, the volcano was known to have historically undergone eruptions lasting up to 3 years. Given that the current eruption was showing no signs of declining intensity at the volcano itself, but rather causing lava fountains of greater height than

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during the first days of the eruption, and that seismic activity had not decreased, Tedesco thought there was still a good possibility -- if the eruption continued -- that lava might indeed reach the Goma-Sake road. Given the distance between the volcano and the road, and the viscosity of the lava now approaching the road, this, however, would not happen for another 3-8 weeks.

16. Tedesco then turned to the question of the danger of the lava eventually releasing the CO2 gas of Kabuno Bay. He did not feel this was at all likely. In his view, an "overturn" of the lake could be caused only by a sudden serious major event, such as an earthquake, a large landslide, or a sudden major volcanic eruption in or quite near the lake. He pointed out that the lava from Nyamulagira, if it reached the lake, would be traveling very slowly and enter the lake over a period of time, not suddenly. Tedesco also felt that historical evidence indicated that the lake was not as unstable as some people were suggesting. He noted that though there was much CO2 present, quite close to the surface of the lake, "saturation" had not been reached. Most importantly, the lake, he observed, had survived many major "traumas" in recent history -- serious earthquakes, large volcanic eruptions lasting years and dumping many tons of lava into the lake -- without having manifested any dramatic reaction. By historical standards, the present flow of lava from Nyamulagira -- if it reached the lake at all (which is 4 km further south than the Goma-Sake road -- was a minor event, and very unlikely to cause any special catastrophe. Tedesco noted also that even were there a gas release from Kabuno Bay, winds -- which normally flow east to west -- would most likely carry these towards the west and not towards Goma.

17. Local humanitarian actors had been concerned that the ash from the volcano's eruption could contaminate water sources in nearby population centers. Some tests conducted had confirmed that drinking water in some communities was below standards for safety. Tedesco pointed out, however, that only communities obtaining water from standing sources would be affected. Spring water, as well as fresh rain water, could be expected to be pollution free. Regarding the tests conducted, Tedesco doubted that the poor quality results had anything to do with the volcano's current eruption, but were rather chronic problems for these communities living in areas with no good water sources.

¶18. The major concern, in Tedesco's view, was the possible effect on agriculture in the area if the eruption were long in duration. The ash and hair-like debris from the eruption were dangerous for grazing animals and for agriculture. He agreed that moving cattle and other grazing stock away from the area would be a wise precaution, and suggested that awareness campaigns be conducted to ensure that populations washed agricultural products from the Sake area well before consuming them.

Possible risk reduction via degassing of the Kabuno Bay

¶19. In a private conversation, USAID/OFDA Rep asked Tedesco specifically if he thought a "degassing" intervention of the type in place in Lake Nyos in Cameroon -- where CO2 is allowed to escape the lake gradually through the insertion of a large tube -- would significantly reduce the risk of a deadly gas release from Lake Kivu at some point in the future. Tedesco was of the opinion that this was not a priority, given both the proven stability of the lake and the undesirability of adding more CO2 to the atmosphere in the current "global warming" context. He added that a small such operation was already in place in Kabuno Bay.

Post-briefing developments

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¶10. In the days that have followed Tedesco's briefing, volcanic activity at the Nyamulagira source has weakened significantly. The lake has drained and lava stopped flowing from the fissure in major quantities. The original lava flow has veered in an easterly direction away from the direction of the Sake-Goma road toward an uninhabited forest area, though additional deviations are possible. Though the volcanologists of the Goma Volcanic Observatory say it is too early to declare that the eruption is for sure completely over, it now seems clear that neither the road (still 11 kilometers distant) nor the lake will be touched. There has also been a significant decrease in volcanic ash falling into areas west of the volcano.

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